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United States
Department of
Agriculture

Soil
Conservation
Service

Spokane,
Washington



in cooperation with

Department of Ecology
State of Washington

Reserve
A292.9
J63F2

Water Supply Outlook for Washington

as of MAY 1, 1981 . . .



TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SNOW SURVEYORS MAKING SPECIAL MEASUREMENTS OF THE
SNOWPACK NEAR MT. ST. HELENS VOLCANO, WASHINGTON, APRIL, 1980.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building, 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4420 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U. S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 --- for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 --- for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 --- and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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In Cooperation with

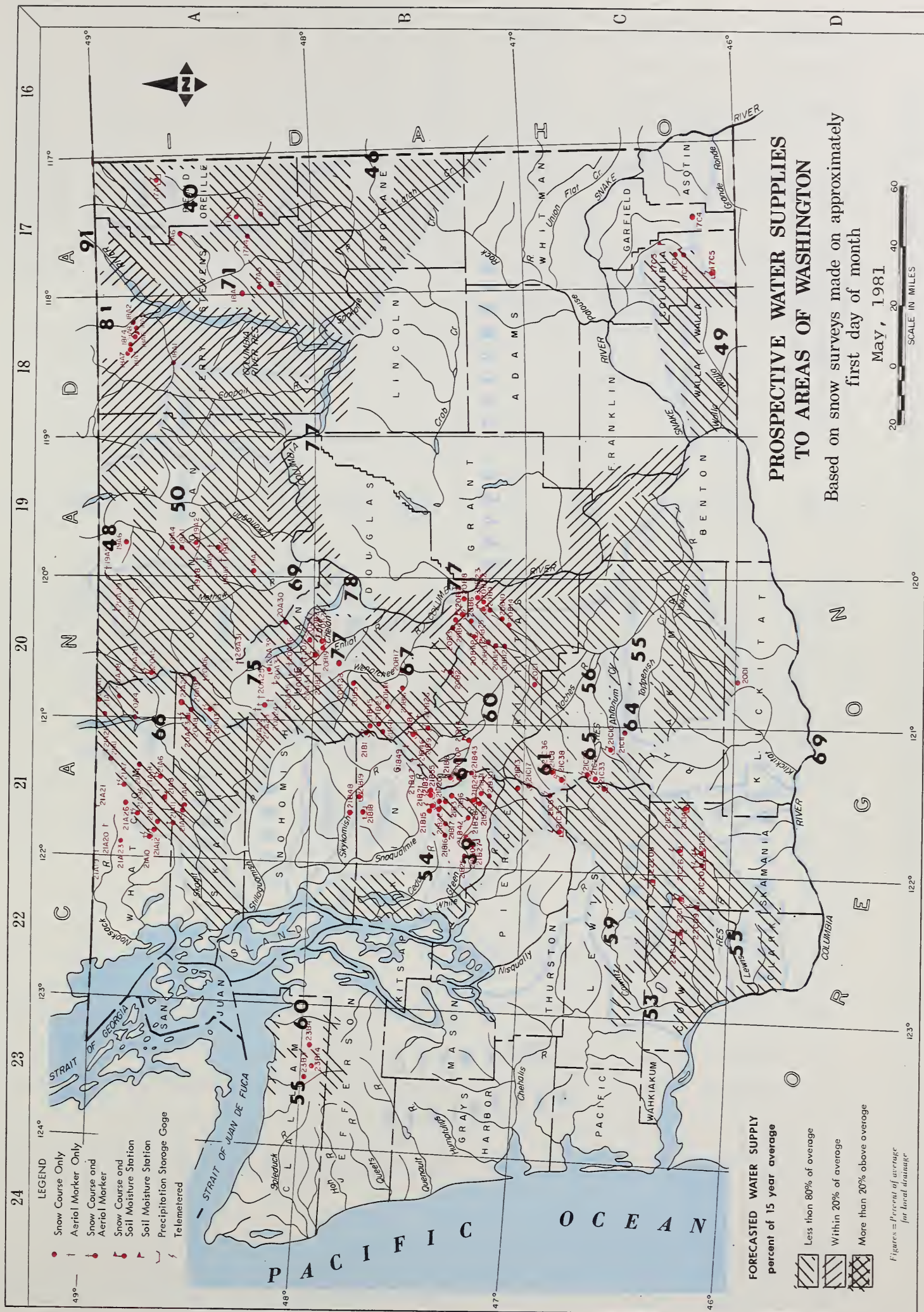
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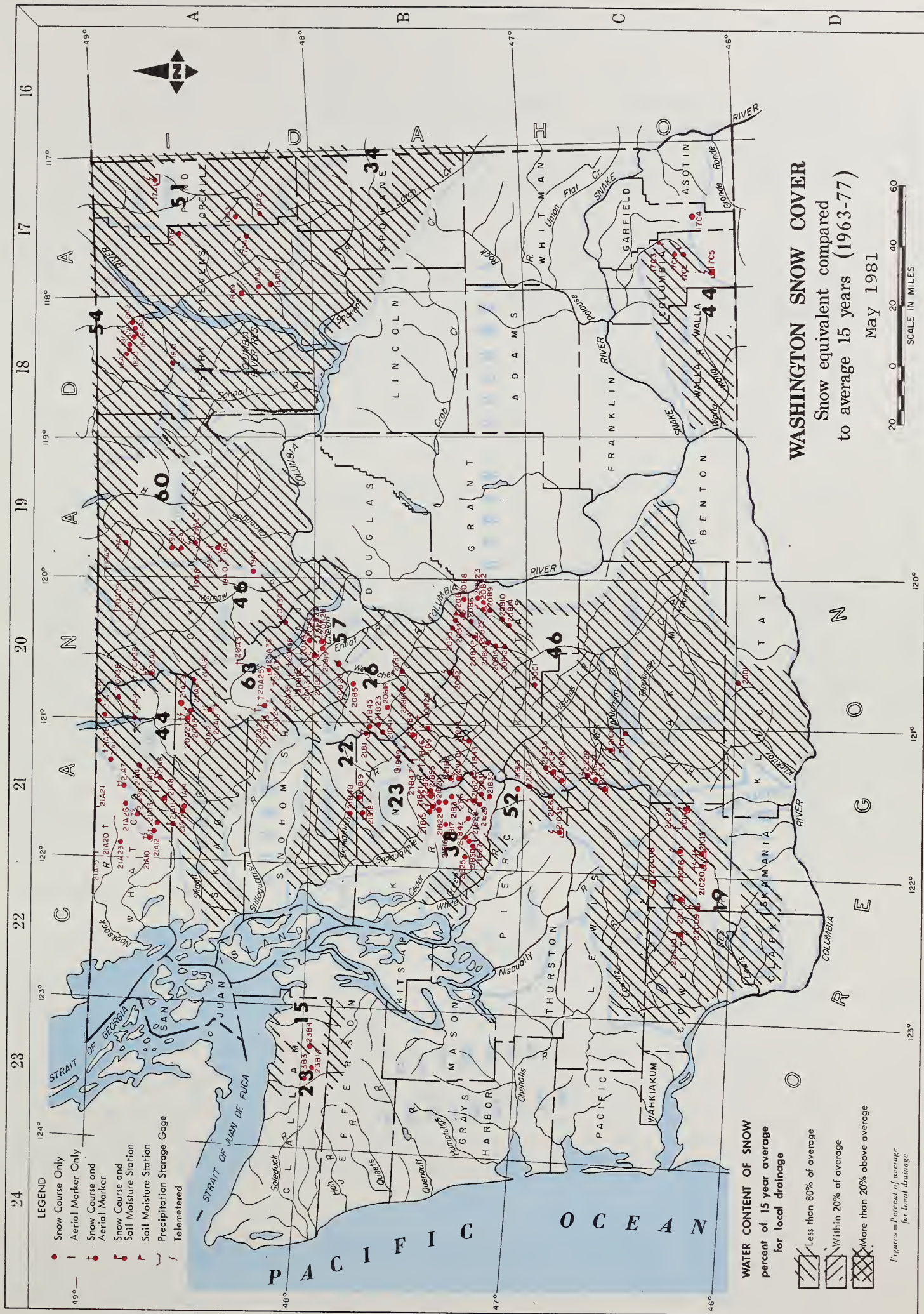
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INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	1A1SP	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	38N	36E	3170
Snow Caps Creek	18A4	26	39N	35E	3595
Snow Caps Trail	18A5	3	38N	36E	2150
Summit G. S.	18A6	5	38N	36E	2720
	18A7	20	39N	35E	4600
Colville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A4	26	31N	41E	4925
Stranger Mountain	17A5	11	31N	38E	4990
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sierman Creek Pass	18A1	19	36N	35E	5350
Okanogan River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	19	37N	24E	6000
Paysien	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2SP	33	37N	24E	4500
Stratford Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harris Pass	20A5SP	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loop	19A7	36	34N	23E	4650
Chelan Lake Bosin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lynan Lake Flat	20A23SP	18	31N	16E	5900
Park Creek Ridge	20A15a	19	34N	16E	2220
Park Creek Flat	20A12SP	18	34N	16E	4600
Petersons	20A16a	2	34N	17E	3730
Rainy Pass	20A9SP	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Mirror Lake	20A39	30	31N	18E	5600
Entiat River					
Blue Creek G.S.	20B28a	19	28N	18E	5425
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4540
Entiat River Trail	20A34a	2	29N	17E	3325
Four Mile Ridge	20B27a	15	28N	19E	6800
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	3540
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540
Pugh Ridge	20A32a	34	30N	18E	6725
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A33u	21	30N	17E	3910
Tommy Creek	20B21a	10	28N	18E	4900
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	3170
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240
Blewett Pass No. 2	20B2 SP	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Enatachee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B15P	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
Trough 2	20B25SP	10	20N	20E	5310
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	40E	5700
Touchet River					
Couse	17C3m	2	9N	40E	3370
Homeshead	17C1	11	9N	40E	4030
Martin Springs (Helmets SM)	17C2M	23	9N	40E	4400
Touchet No. 2	17C5SP	6	7N	40E	5530
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
Snoqualmie River					
Alpine Meadow	21B48	31	27N	9E	3500
Olallie Meadows	21B2P	19	22N	11E	3625
South Fork Tolt	21B18P	26	26N	9E	1900
Olallie Meadows East	21B55SP	20	22N	11E	8700
Skykomish River					
Lake Elizabeth	21B19P	33	26N	10E	2900
PUGET SOUND DRAINAGE					
Nisqually River					
Paradise Park (New)	21C35SP	13	15N	8E	5500
White River					
Corral Pass	21B13SP	30	18N	11E	6000
Green River					
Airstrip	21B24P	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Cougar Mountain	21B42SP	21	21N	9E	3200
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Lynn Lake	21B5C	22	20N	8E	4000
Sawmills Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5000
Stampede Pass	21B10 SP	25	21N	11E	3860
Twin Camp	21B30	18	19N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mt. Gardner	21B21P	30	22N	10E	3300
Mt. Gardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsey	21B16P	31	22N	9E	2500
Mt. Washington	21B15P	8	22N	9E	3000
Rex River	21B17P	11	21N	9E	2400
South Fork Cedar	21B6P	24	21N	10E	3000
Tinkham Creek	21B20P	1	21N	10E	3400
Lewis River					
Lone Pine Shelter	21C26SP	8	9N	7E	3800
Marble Mountain	22C09SP	26	8N	5E	3200
Plains of Abraham	22C1SP	35	8N	5E	4400
Spencer Meadow	21C20SP	16	8N	7E	3400
Surprise Lakes	21C13SP	14	7N	8E	4250
Cowlitz River					
Cayuse Pass	21C6	15	16N	10E	5300
Pigtail Peak	21C33SP	11	13N	11E	5900
Paloto Hill	21C14SP	36	10N	10E	4500
Ryan Lake	22C08SP	9	10N	6E	3280
Sheep Canyon	22C10SP	12	8N	4E	4920
Skagit River					
Beaver Creek Trail	21A4	35	39N	12E	2200
Beaver Pass	21A1	9	39N	12E	3680
Brown Top	21A28a	26	40N	12E	6000
Devils Park	20A4	34	38N	16E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows (New)	20A38	8	40N	16E	5000
Granite Creek	21A29	25	36N	16E	3500
Meadows Cabins	20A8	29	36N	14E	1900
New Hozomeen Lake	20A7	19	40N	14E	2800
Thunder Basin	21A30	10	35N	14E	4200
Baker River					
Dock Butte	21A11a	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6a	17	38N	11E	5400
Marten Lake	21A9a	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12aP	20	37N	8E	2100
Schreibers Meadow	21A10aF	18	37N	8E	3400
S. F. Thunder Creek	21A14a	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A8P	25	37N	9E	4500
Hocksock River					
Bald Mountain	21A19a	7	40N	7E	4400
Canyon	21A20a	20	40N	8E	5100
Glacier Creek	21A23	9-10	38N	7E	3700
Panorama New	21A26	17	39N	9E	4300
Twin Lakes	21A21a	16	40N	9E	5200
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	31	29N	6W	4500
Elwha River					
Hurricane	23B3	36	29N	7W	4500
LEGEND					
21A7	Snow Course Only				
21A7a	Aerial Marker Only				
21A7a	Snow Course And Aerial Marker				
21A7m	Soil Moisture Station				
21A7p	Snow Course And Precipitation Storage Gage				
21A7p	Precipitation Storage Gage				
21A7SP	Snow Pillow				



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UPPER COLUMBIA DRAINAGE											
NAME	NUMBER	SFC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SFC.	TWP.	RANGE	ELEV.
Pend Oreille River											
Boyer Mountain	17A2	7	31N	43E	5250	Colockum Creek					
Bunchgrass Meadow	17A1SP	24	31N	44E	5000	Colockum Creek Upper	20B22	11	20N	20E	5300
Winchester Creek	17A3	30	33N	43E	2970	Colockum Creek Lower	20B23	1	20N	20E	4300
Kettle River											
Boulder Road	18A2	36	39N	36E	1450	Squilehuck Creek					
Butte Creek	18A3	28	39N	35E	4070	Beehive Springs	20B3	12	21N	19E	4400
Cabin Creek	18A8	5	38N	36E	3170	Scout-A-Vista	20B4	18	21N	20E	3400
Goat Creek	18A4	26	39N	35E	3595	Stemilt Creek					
Snow Caps Creek	18A5	3	38N	36E	2150	Jump-Off	20B8	34	21N	20E	4450
Snow Caps Trail	18A6	5	38N	36E	2720	Upper Wheeler	20B6SP	30	21N	20E	4400
Summit G. S.	18A7	20	39N	35E	4600	Yakima River					
Colville River											
Baird	17A6	19	36N	42E	3215	Althum R. S.	21C11	24	12N	14E	3100
Carlson	18A9	34	32N	38E	2885	Big Boulder Creek	21B9SP	35	23N	14E	3200
Chewelah	17A4	11	32N	41E	4925	Bumping Lake	21C8P	23	16N	12E	3450
Stranger Mountain	17A5	26	31N	38E	4990	Bumping Lake New	21C36	13	16N	12E	3400
Togo	18A10	6	29N	38E	3370	Bumping Ridge	21C38SP	9	15N	12E	4600
Sanpoil River											
Sierran Creek Pass	18A1	19	36N	35E	5350	Colockum Pass	20B9	25	20N	20E	5370
Okanogan River											
Clark	19A8a	2	36N	23E	7000	Cooke Creek	20B10	27	19N	20E	4123
Muckamuck	19A9a	20	36N	24E	6750	Fish Lake	21B4SP	28	24N	14E	3371
Mutton Creek No. 1	19A1	30	37N	24E	5700	Green Lake	21C10SP	3	12N	13E	6000
Mutton Creek No. 2	19A4	19	37N	24E	6000	Grouse Camp	20B11SP	29	21N	19E	5385
Poyoxien	20A28a	32	40N	18E	4300	High Creek	20B12	34	20N	19E	2930
Rusty Creek	19A3P	18	35N	24E	4000	Lake Cle Elum	21B46a	22	23N	12E	4624
Salmon Meadows	19A2SP	33	37N	24E	4500	Lemah Creek	21B47a	7	23N	13E	3327
Stavation Mtn.	19A10a	15	35N	23E	6750	Manastash	20C1	24	17N	16E	3935
Tahts Coulee	19A6	30	39N	25E	2845	Morse Lake	21C17SP	6	16N	11E	5400
Methow River											
Billy Goat Pass	20A10a	10	38N	20E	6400	Nanum	20B13	4	20N	19E	3875
Dallar Watch	20A29a	8	39N	20E	7000	Trail Creek	20B14	20	19N	20E	3360
Harris Pass	20A5SP	7	37N	18E	6500	Tunnel Avenue	21B8P	13	21N	11E	2450
Horseshoe Basin	19A5a	15	40N	23E	7000	Van Epps Pass	20B26a	16	23N	15E	5925
Loup Loup	19A7	36	34N	23E	4650	Walters Flat	20B15	22	20N	19E	3360
Chelan Lake Basin											
Cloudy Pass	20A22a	12	31N	15E	6500	Wapitus Lake	21B49a	12	23N	13E	3024
Greenwood Flat	20A25a	3	31N	16E	3540	White Pass (East Side)	21C28SP	2	13N	11E	4500
Little Meadows	20A24a	8	31N	16E	5275	LOWER COLUMBIA DRAINAGE					
Lyman Lake	20A23SP	18	31N	16E	5900	Asotin Creek					
Park Creek Flat	20A13a	19	34N	16E	2220	Spruce Springs					
Park Creek Ridge	20A12SP	34	34N	16E	4600	17C4	9	8N	40E	5700	
Petersons	20A16a	2	34N	17E	3730	Touchei River					
Rainy Pass	20A9SP	21	35N	17E	4780	17C3m	2	9N	40E	3370	
Safety Harbor	20A30a	32	31N	20E	6300	17C1	11	9N	40E	4030	
War Creek Pass	20A31a	34	33N	18E	6500	Martin Springs (Helmets SM)	17C2M	23	9N	40E	4400
Mirror Lake	20A39	30	31N	18E	5600	Touchei No. 2	17C5SP	6	7N	40E	5530
Entiat River											
Blue Creek G. S.	20B28a	19	28N	18E	5425	Klickitat River					
Brief	20B19	34	28N	19E	1600	Satus Pass	20D1	21	6N	17E	4030
Entiat Meadows	20A33a	28	31N	17E	4540	Snoqualmie River					
Entiat River Trail	20A34a	2	29N	17E	3325	Alpine Meadow	21B48	31	27N	9E	3500
Four Mile Ridge	20B27a	15	28N	19E	6800	Olallie Meadows	21B2P	19	22N	11E	3625
Fox Camp	20A36a	17	30N	18E	6510	South Fork Tolt	21B18P	26	26N	9E	1900
Pope Ridge	20B20	22	29N	18E	3540	Olallie Meadows East	21B55SP	20	22N	11E	8700
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540	Skykomish River					
Pugh Ridge	20A32a	34	30N	18E	6725	Lake Elizabeth	21B19P	33	26N	10E	2900
Shady Pass	20A37	20	29N	19E	6200	LEGEND					
Snow Brushy	20A35a	21	30N	17E	3910	21A7	Snow Course Only				
Tommy Creek	20B21a	10	28N	18E	4900	21A7a	Snow Course And Aerial Marker				
Wenatchee River											
Perne-Mill Creek	21B23	7	26N	15E	3170	21A7m	Snow Course And Soil Moisture Station				
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240	21A7P	Snow Course And Precipitation Storage Gage				
Blewett Pass No. 2	20B2SP	35	22N	17E	4270	21A7SP	Snow Pillow				
Chiwaukum G. S.	20B16	4	25N	17E	1810						
Lake Wenatchee	20B5	33	27N	17E	1970						
Leavenworth R. S.	20B17	1	24N	17E	1127						
Merritt	20B13	4	26N	16E	2140						
Stevens Pass	21B15P	14	26N	13E	4070						
Stevens Pass Sand Shed	21B45	12	26N	19E	3700						
Trough 2	20B25SP	10	20N	20E	5310						

WATER SUPPLY OUTLOOK

State of Washington

May 1, 1981

The snowstorms which occurred after snow surveys in April did nothing to improve the water supply situation. The normal maximum snow accumulation occurs about April 1. March 1 turned out to be the maximum snowpack for 1981, and is another indicator of the lack of snow. Forecasts throughout the state are below those issued on April 1, but only minimally. Rainfall this past month was about normal with stations fluctuating from slightly below normal to above normal. Reservoir storage is the bright spot, with most being well above average.

SNOW COVER

Snow course measurements taken near the first of May show the snowpack declining at above normal rates due mainly to the lack of snow as insulation. Layers within the pack break down more quickly during low snowpack years which contributes to streamflow at higher rates early in the year. The normal storage characteristic of snow is lost. Snowpacks in some parts of the state are less than they were in 1977 and range from a low of 15 percent on the Dungeness to a high of 63 percent of normal on the Chelan Basin. Areas with snowpacks below 1977 include the Lewis River at 19 percent as compared to 32 percent in 1977. Others with below 1977 percents are the Skykomish, the Nooksack, and the Dungeness. All of these basins contribute streamflow to the western slope of the Cascades or the Olympic Peninsula. Snowpack conditions over the rest of the state have remained about the same as last month. Most of these snowpacks are above that in 1977.

RESERVOIRS

The bright spot in the water supply picture remains the reservoir storage. All reservoirs are above normal with the exception of Gorge Reservoir which is only slightly below normal. Care will still need to be used so that if adequate snowpack and precipitation do not occur next year, sufficient water will still remain in storage to satisfy needs at that time. What this means is that conservation of water is necessary to reduce water use this year and improve carryover to 1982. The main use of stored water will be to satisfy late summer and fall water needs when streamflows will be well below normal. Most of this water was stored in December when rains washed out much of the snowpack that existed at that time.

PRECIPITATION

The National Weather Service reports precipitation that is above average over most of the state. Most areas in Washington have reported above average precipitation with the northwest slope of the Cascades well above average at 164 percent of normal. Washington, excluding the northwest portion, was 130 percent of normal. Two areas in the state had well below normal precipitation. Central Washington was only 31 percent of normal and northcentral Washington was only 53 percent of normal, worsening an already bleak water supply picture. In Canada, the stations reported indicated a good month for precipitation at 163 percent of normal; only a few stations reported at or slightly below normal precipitation.

STREAMFLOW

April has been a month of little contribution to improve the water supply situation. The snow storms which occurred just after the first of April were not followed by any storms that would improve the snowpack. The soil moisture that built up during the fall will go quite a ways in supporting flows this spring, but flows will be poor in mid to late summer and fall. Forecasts have decreased slightly from last month. The mainstem of the Columbia is in the best shape with flows about 80 percent of normal, due mostly to adequate snowpacks in Canada. Forecasts in Washington range from a low of approximately 50 percent on several rivers to a high of 80 percent on the Kettle River. Streamflows during the month had a wide range. The low was 72 percent of normal on the Palouse with a high of 121 percent of normal on the Skagit. The greatest number of gaging stations indicate flows over most of the state are normal. This would mean that due to low snowpacks, melt is progressing at a faster rate - contributing to flows earlier in the year. Numerical forecasts can be found on the following pages.

STREAMFLOW FORECASTS - MAY, 1981

The following summarized runoff forecasts are based principally on mountain snow-cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts. These forecasts are made as a product of the cooperative efforts of the Soil Conservation Service and the National Weather Service. Streamflow figures for 1980 are preliminary and subject to revision.

1980 are preliminary and subject to revision.							
Basin, Stream and Station	Forecast Runoff 1981	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-	15-yr.			
		15-yr. Avg.	cast period	1980	1979	1978	15-yr. Average 63-77
<u>COLUMBIA BASIN</u>							
<u>COLUMBIA RIVER SYSTEM</u>							
Columbia River	38800	91	May-Sept	35923	32506	40601	42769
at Birchbank <u>1/</u>	30595	91	May-July	29192	25203	30622	33621
	21350	91	May-June	22730	17683	20674	23461
Columbia River	46900	76	May-Sept	52308	47880	58882	61503
at Grand Coulee <u>1/</u>	38400	76	May-July	43612	39207	46573	50526
	28700	76	May-June	35163	30248	33599	37764
Columbia River	51700	77	May-Sept	56911	50210	64144	67050
bl. Rock Island Dam <u>1/</u>	42795	79	May-July	48166	41612	51416	55578
	32035	77	May-June	39066	32364	37495	41605
Columbia River	61600	68	May-Sept	78563	66834	85792	90981
at The Dalles, OR <u>1/</u>	51685	68	May-July	65325	55749	69552	76007
	39935	68	May-June	53710	45007	52090	58725
<u>PEND OREILLE RIVER SYSTEM</u>							
Pend Oreille River	5420	40	May-Sept	11197	10206	13067	13595
bl. Box Canyon	4915	40	May-July	10042	9662	11566	12286
	4090	40	May-June	8702	8783	9235	10230
<u>KETTLE RIVER SYSTEM</u>							
Kettle River	1300	81	May-Sept	1422	1133	1682	1616
nr. Laurier	1225	80	May-July	1334	1090	1504	1524
	1100	81	May-June	1190	1007	1313	1358
Colville River	60	71	May-Sept	76	43	84	84
at Kettle Falls	55	75	May-July	66	38	71	73
	50	77	May-June	57	35	63	65

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Basin, Stream and Station	Forecast Runoff 1981	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore- cast period	1980	1979	1978	15-yr. Average 63-77
<u>SPOKANE RIVER SYSTEM</u>							
Spokane River **	975	46	May-Sept	1675	1924	1571	2102
at Post Falls, ID 2/	905	46	May-July	1507	1872	1474	1966
	845	46	May-June	1365	1793	1343	1833
<u>OKANOGAN RIVER SYSTEM</u>							
Similkameen River	695	48	May-Sept	1340	811	1377	1440
nr. Nighthawk	660	49	May-July	1251	751	1236	1339
	545	49	May-June	1108	667	1041	1114
Okanogan River	800	50	May-Sept	1418	840	1513	1595
nr. Tonasket	720	50	May-July	1290	756	1323	1441
	585	50	May-June	1107	662	1109	1180
<u>METHOW RIVER SYSTEM</u>							
Methow River	645	69	May-Sept	915	441	1045	938
nr. Pateros	595	69	May-July	854	395	930	864
	485	68	May-June	750	345	748	718
<u>CHELAN RIVER SYSTEM</u>							
Chelan River	890	78	May-Sept	933	675	1179	1139
at Chelan 3/	765	78	May-July	833	584	1008	982
	575	78	May-June	672	475	750	736
Stehekin River	615	75	May-Sept	643	511	795	823
at Stehekin	520	76	May-July	547	422	656	683
	385	77	May-June	425	332	469	497
Entiat	175	77	May-Sept	187	124	264	227
nr. Ardenvoir	165	81	May-July	171	110	237	204
	125	79	May-June	143	94	185	159
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River	785	67	May-Sept		785	1115	1172
at Plain	695	67	May-July		704	975	1032
	525	67	May-June		596	749	778
Wenatchee River	1110	70	May-Sept	1201	1024	1490	1595
at Peshastin	965	68	May-July	1087	932	1311	1414
	735	68	May-June	893	796	1010	1077
Stemilt Basin	95*	69	May-Sept				138*
nr. Wenatchee							
Icicle Creek	220	60	Apr-Sept				371
nr. Leavenworth	210	62	Apr-July				342
	175	63	Apr-June				279

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage in Lake Chelan.

* Thousands of Miners' Inches

** Forecasts made by Jack A. Wilson, Soil Conservation Service, Boise, Idaho.

Basin, Stream and Station	Forecast Runoff 1981	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore- cast period	1980	1979	1978	15-yr. Average 63-77
YAKIMA RIVER SYSTEM							
Yakima River	75	61	May-Sept	78	99	88	122
nr. Martin <u>4/</u>	65	59	May-July	66	89	75	110
	55	60	May-June	58	77	67	91
Yakima River	495	60	May-Sept	552	574	644	827
at Cle Elum <u>5/</u>	440	60	May-July	476	543	532	735
	360	60	May-June	406	459	451	603
Yakima River	1000	55	May-Sept	1235	1115	1504	1815
nr. Parker <u>6/</u>	880	55	May-July	1134	1014	1218	1601
	735	55	May-June	1011	906	1014	1340
Kachess River	55	52	May-Sept	77	76	73	105
nr. Easton <u>7/</u>	50	51	May-July	70	70	67	98
	45	55	May-June	57	63	60	82
Cle Elum River	275	65	May-Sept		295	346	423
nr. Roslyn <u>8/</u>	245	65	May-July	252	273	301	379
	195	65	May-June	216	239	247	302
Bumping River	80	61	May-Sept	101	90	100	132
nr. Nile <u>9/</u>	70	59	May-July	92	83	89	119
	55	59	May-June	83	73	74	93
American River	70	61	May-Sept	95	71	93	114
nr. Nile	60	58	May-July	88	64	81	103
	50	61	May-June	79	56	65	82
Tieton River	145	65	May-Sept	176	159	191	223
at Tieton Dam <u>10/</u>	120	66	May-July	144	128	152	183
	90	65	May-June	118	100	112	139
Naches River	430	56	May-Sept	514	492	560	772
nr. Naches <u>11/</u>	380	56	May-July	479	446	495	684
	290	52	May-June	422	395	403	558
Ahtanum Creek	24	62	May-Sept			37	39
nr. Tampico <u>12/</u>	21	60	May-July			32	35
	16	55	May-June			26	29

4/ Observed flow corrected for storage in Lake Keechelus.

5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation, and Sunnyside Canals.

7/ Observed flow corrected for storage in Lake Kachess.

8/ Observed flow corrected for storage in Lake Cle Elum.

9/ Observed flow corrected for storage in Bumping Lake.

10/ Observed flow corrected for storage in Rimrock Lake.

11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals, and City of Yakima.

12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1981	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore- cast period	1980	1979	1978	15-yr. Average 63-77
<u>LOWER COLUMBIA RIVER SYSTEM</u>							
Mill Creek	3.80	49	May-Sept		9.08	4.56	7.70
at Walla Walla	3.65	49	May-July		8.96	4.44	7.50
	3.55	49	May-June		8.85	4.36	7.30
Lewis River	530	55	May-Sept		671	798	960
at Ariel <u>13/</u>	435	55	May-July		539	504	790
	360	55	May-June		459	408	654
Cowlitz River	1010	59	May-Sept		1205	1292	1717
Bl. Mayfield Dam	855	59	May-July		1010	1005	1445
	675	59	May-June		846	808	1144
Cowlitz River	1140	53	May-Sept		1522	1705	2170
at Castle Rock <u>14/</u>	955	53	May-July		1268	1308	1804
	760	53	May-June		1051	1054	1432
<u>OLYMPIC PENINSULA</u>							
<u>DUNGENESS RIVER SYSTEM</u>							
Dungeness River	85	60	May-Sept		96	136	143
nr. Sequim	70	62	May-July		77	99	113
	50	63	May-June		58	67	79
<u>PUGET SOUND</u>							
<u>SKAGIT RIVER SYSTEM</u>							
Skagit River	1330	66	May-Aug		1352	1673	2017
at Newhalem <u>15/</u>	1425	66	May-Sept		1477	1885	2161
	1170	66	May-July		1188	1460	1776
	850	66	May-June		932	1055	1290
<u>ELWHA RIVER SYSTEM</u>							
Elwha River	265	55	May-Sept		349	395	480
nr. Port Angeles	210	55	May-July		276	288	381
<u>GREEN RIVER SYSTEM</u>							
Green River	90	39	May-Sept	141	145	144	233
bl. Howard Hanson Dam <u>16/</u>							
<u>CEDAR RIVER SYSTEM</u>							
Cedar River	40	54	Apr-Sept		70	59	93
nr. Cedar Falls							

13/ Observed flow corrected for storage in Lake Merwin, Yale, and Swift Reservoirs.

14/ Observed flow corrected for storage in Mayfield Reservoir.

15/ Observed flow corrected for storage in Diablo, Ross, and Gorge Reservoirs.

16/ Observed flow corrected for storage in Howard Hanson Dam.

RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE ^{1/} CAPACITY	1981	1980	Measured May 1 1979	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	248.0	264.5	260.5	238.4
Columbia	Franklin D. Roosevelt Lake	5232.0	3198.4	2460.0	909.9	867.8
Columbia	Banks Lake	714.9	642.7	527.9	393.4	442.8
Oaknogan	Conconully Reservoir	13.0	9.1	6.5	10.3	7.7
Okanogan	Conconully Lake	10.5	10.0	9.0	10.5	8.0
Chelan	Lake Chelan	676.1	224.9	214.4	163.4	219.0
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	159.6	131.5	117.0	113.8
Kachess	Kachess Lake	239.0	240.3	126.7	228.0	194.2
Cle Elum	Lake Cle Elum	436.9	365.1	378.0	180.9	295.9
Bumping	Bumping Lake	33.7	34.3	34.4	13.3	11.6
Tieton	Rimrock Lake	198.0	198.3	144.0	146.4	136.6
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1404.1	1086.3	644.0	731.6	711.5
Skagit	Diablo Reservoir	90.6	87.9	84.1	86.8	86.4
Skagit	Gorge Reservoir	9.8	7.9	7.5	8.0	8.1

^{1/} Based on Active Storage

* 15-yr. Average 1963-1977

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The Following tabulation of Washington stream basins presents the water content of the snow about May 1, 1981, as percent of the same date in 1980 and 1979 and average of record. We have also added a comparison of 1977 data with average for your information, since 1977 was considered a low water year.

Tributary Basin	No. of Courses Average	1981 Snow Water Expressed as percent of			1977 as percent of Average
		1980	1979	1963-77 Avg.	

UPPER COLUMBIA BASIN

Pend Oreille	9	76	62	51	26
Kettle	7	135	79	54	30
Spokane	4	81	42	34	26
Okanogan	30	157	157	60	32
Methow	4	78	475	46	26
Chelan	1	109	102	63	49
Entiat	8	103	96	57	22
Wenatchee	3	41	30	26	22
Yakima	6	63	53	46	12

LOWER COLUMBIA BASIN

Asotin	1	56	31	33	7
Mill Creek	1	100	-	44	-
Lewis	4	-	-	19	32

PUGET SOUND

White	2	73	63	52	28
Green	2	60	42	38	16
Snoqualmie	1	46	28	23	33
Skykomish	2	34	29	22	41
Skagit	9	78	65	44	36
Nooksack	1	49	43	28	-

OLYMPIC PENINSULA

Morse	1	54	43	33	-
Elwha	1	64	40	23	32
Dungeness	1	26	17	15	32

PRECIPITATION 1/

Division Average Observations and Departures

Drainage Divisions	FALL		WINTER		SPRING	
	Sept-Oct Observed	1980 <u>2/</u> Departure	Nov 1980 - Observed	Mar 1981 Departure	April 1981 Observed	Departure
Columbia in Canada	3.76	-1.26	14.49	-1.02	2.79	+1.08
Pend Oreille - Spokane	2.75	-1.29	15.12	-2.43	3.10	+1.28
Northeastern Washington	2.37	-0.11	8.49	-0.91	1.54	+0.28
Southeastern Washington	2.33	-0.18	11.21	+0.78	1.67	+0.14
Central Washington	1.60	+0.63	5.50	+0.22	0.20	-0.45
North Central Washington	1.45	-0.14	7.16	+0.62	0.45	-0.40
Northwest Slope Cascades	7.35	-5.86	52.10	-3.29	10.90	+4.26
Southwest Slope Cascades	3.89	-4.79	38.40	-3.24	5.57	+0.95

Northeastern Washington	- Lower Spokane, Colville, Sanpoil, and Lower Kettle Drainages.
Southeastern Washington	- Touchet, Tucannon, and Palouse Drainages.
Central Washington	- Yakima, Wenatchee, and Chelan Drainages.
North Central Washington	- Methow and Okanogan Drainages.
Northwest Slope Cascades	- Puget Sound Drainages.
Southwest Slope Cascades	- Lower Columbia Drainages.

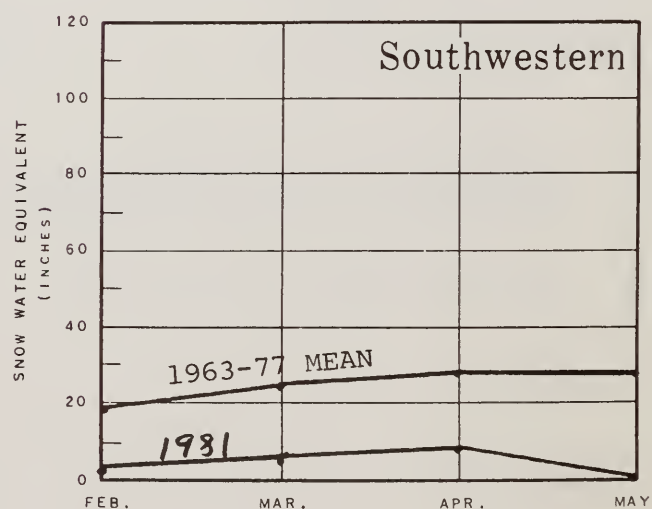
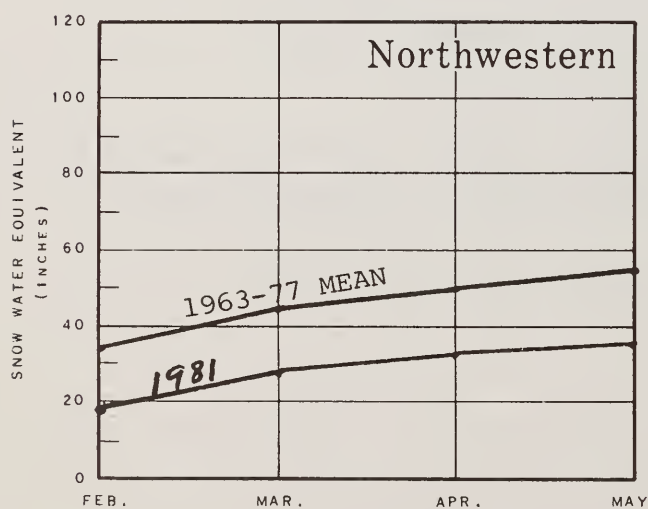
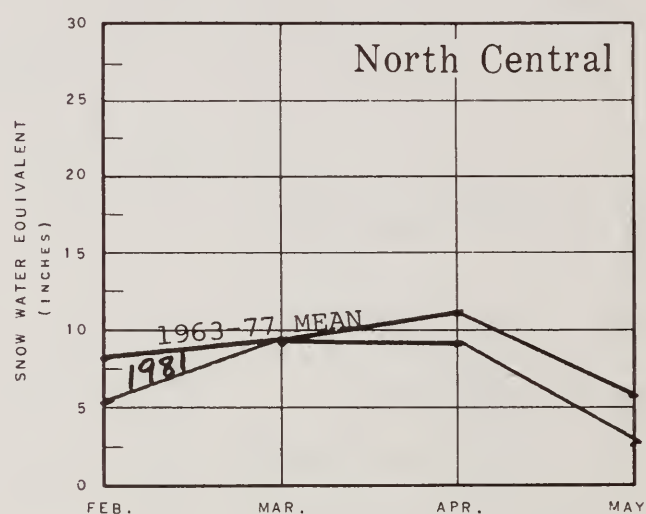
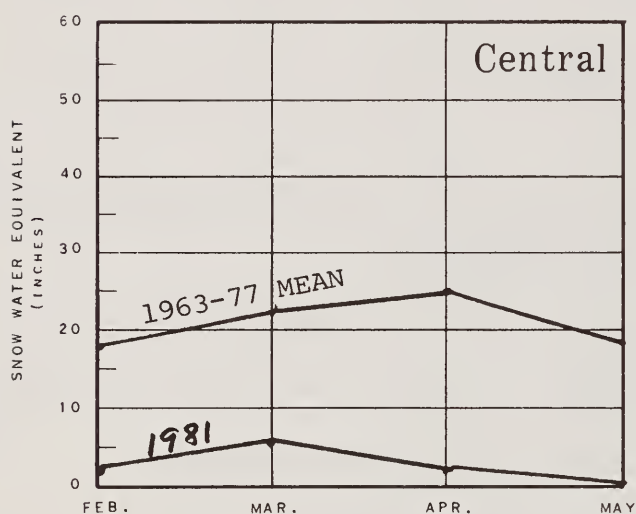
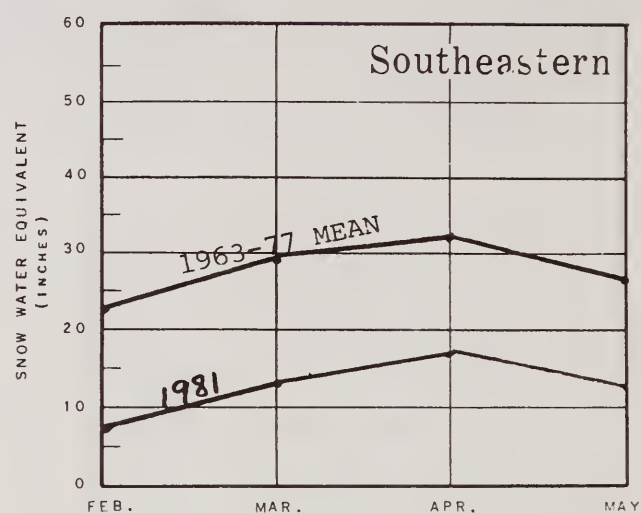
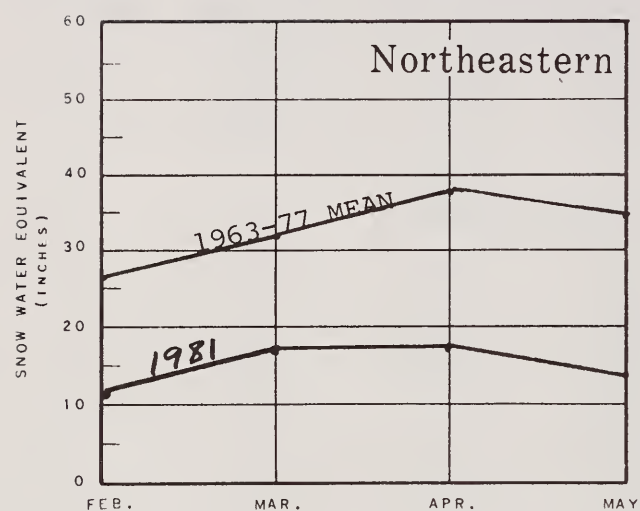
1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service.

2/ Departure from 15-year (1958-72) drainage division average.

WASHINGTON SNOW COVER

1981

DRAINAGE AREAS

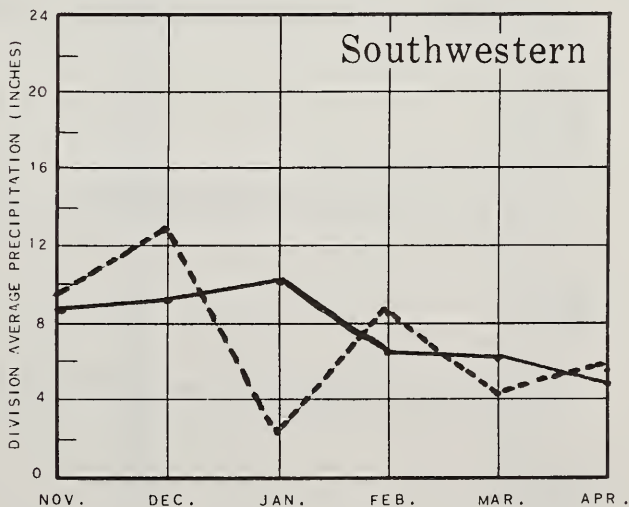
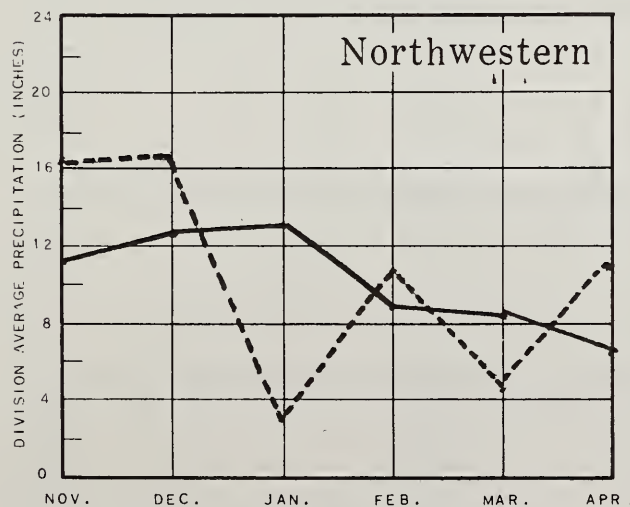
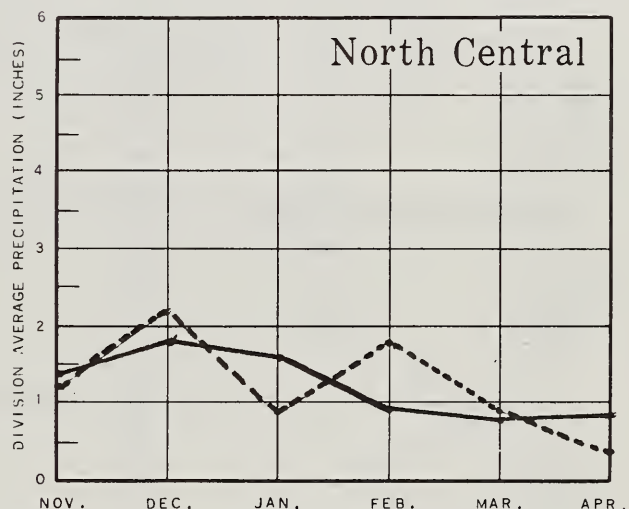
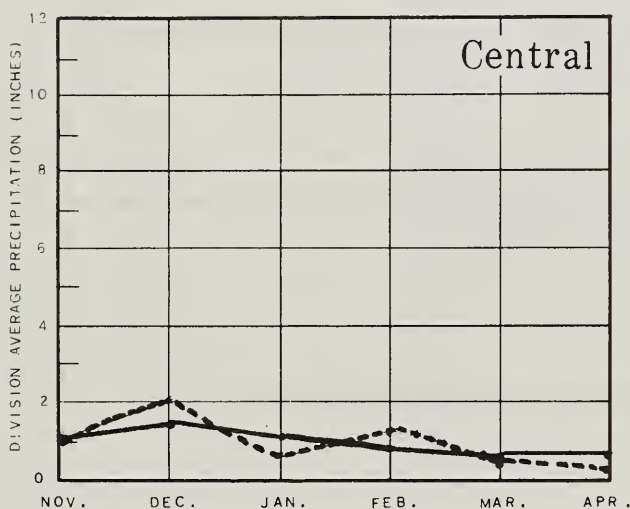
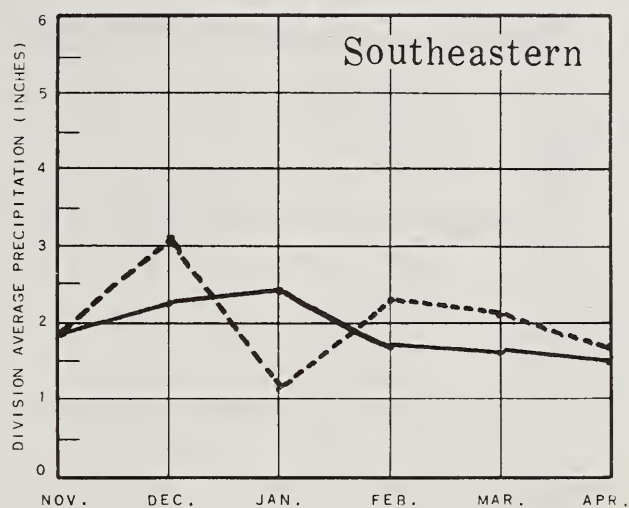
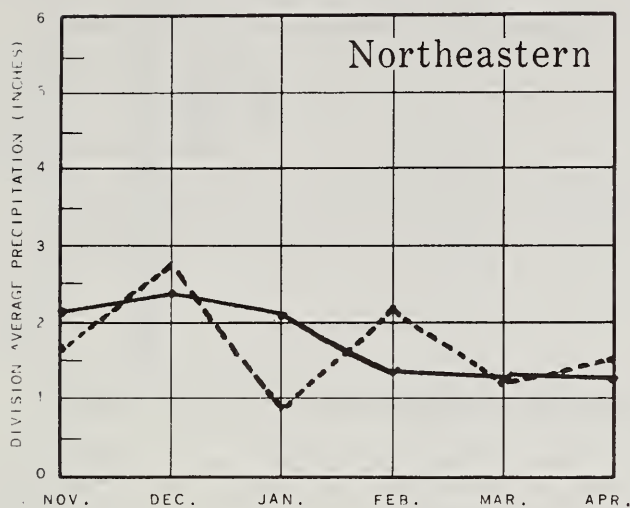


Selected Snow Survey Courses by Soil Conservation Service

WASHINGTON VALLEY PRECIPITATION

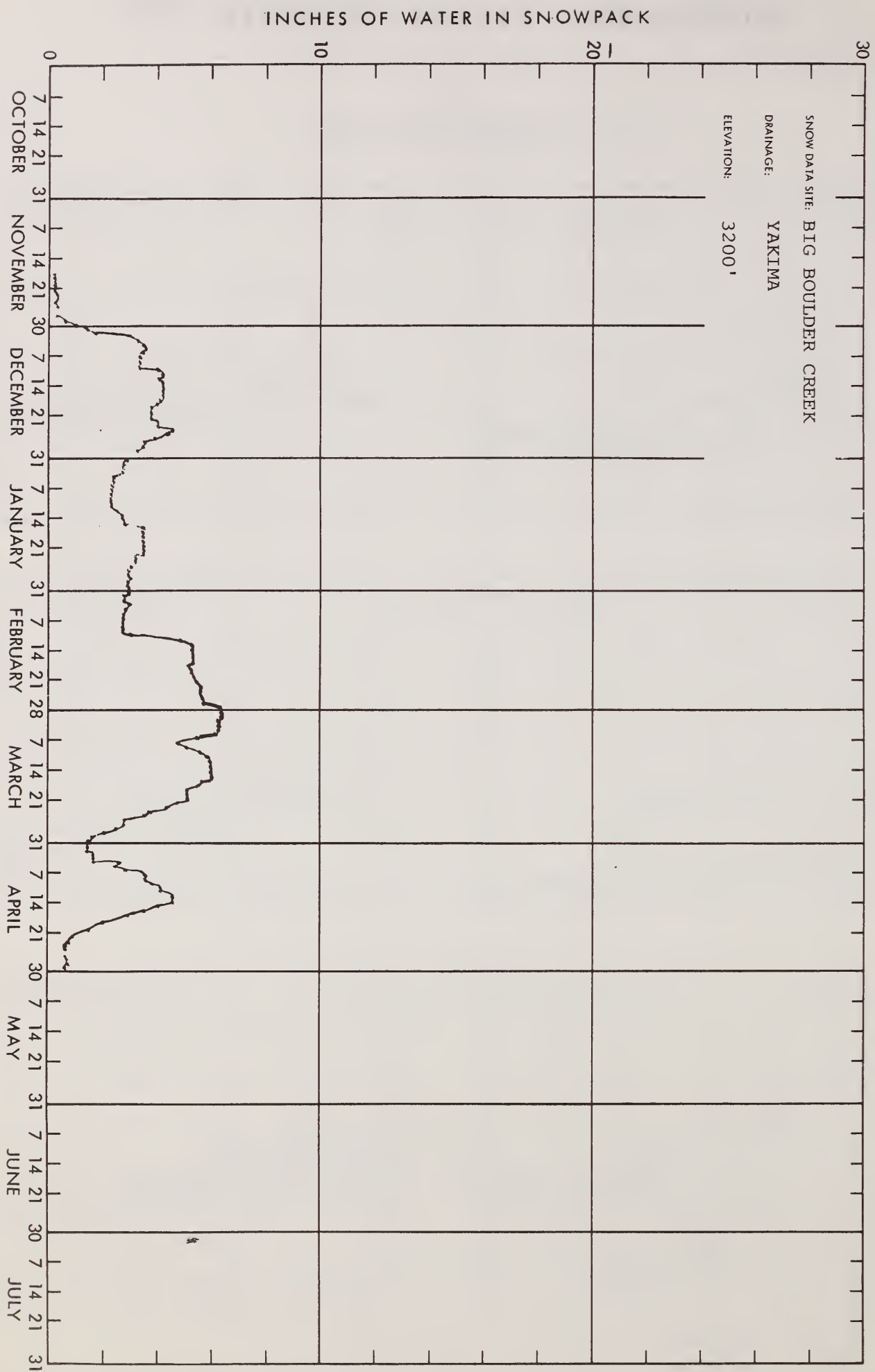
1981

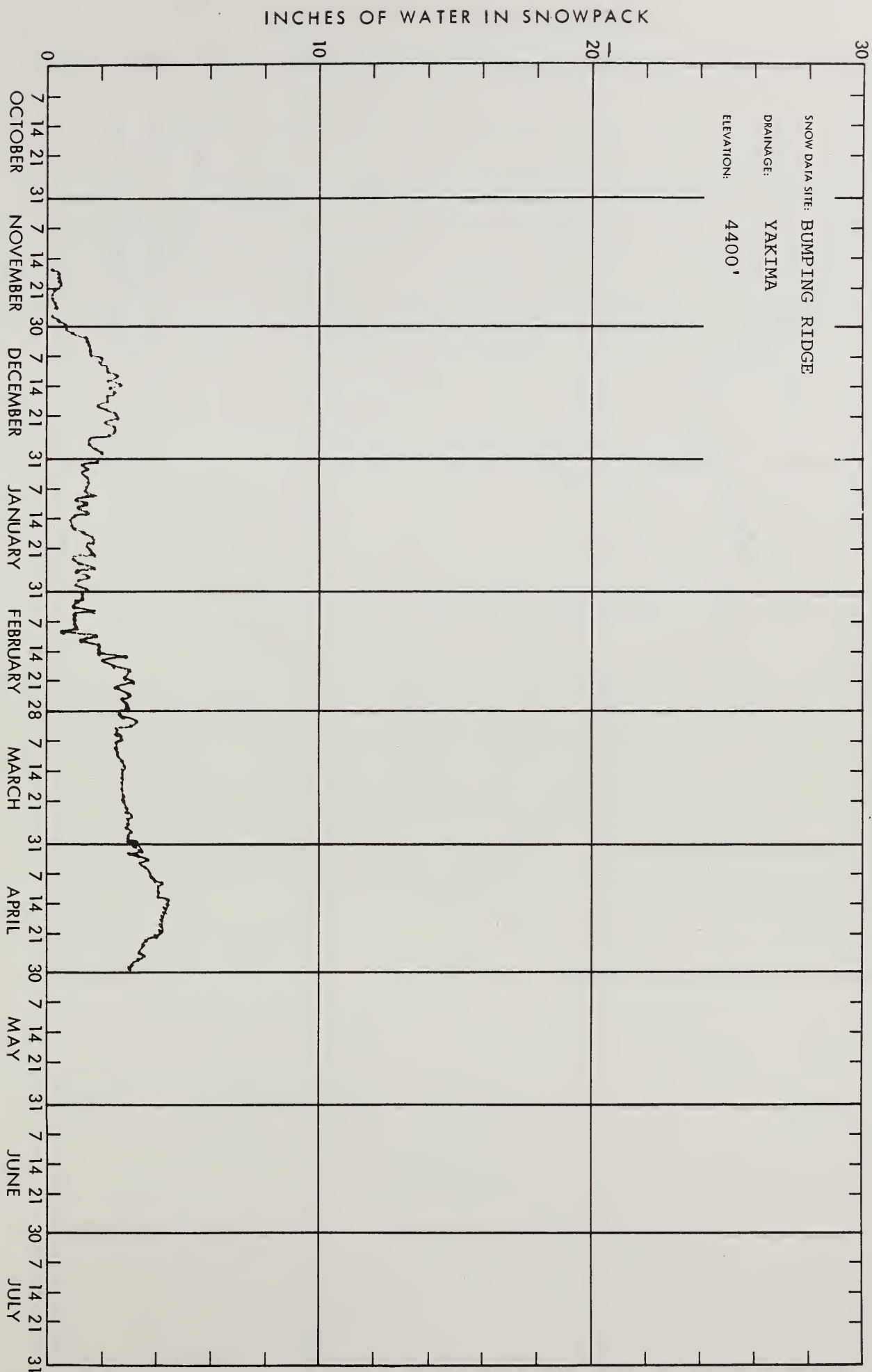
DRAINAGE AREAS

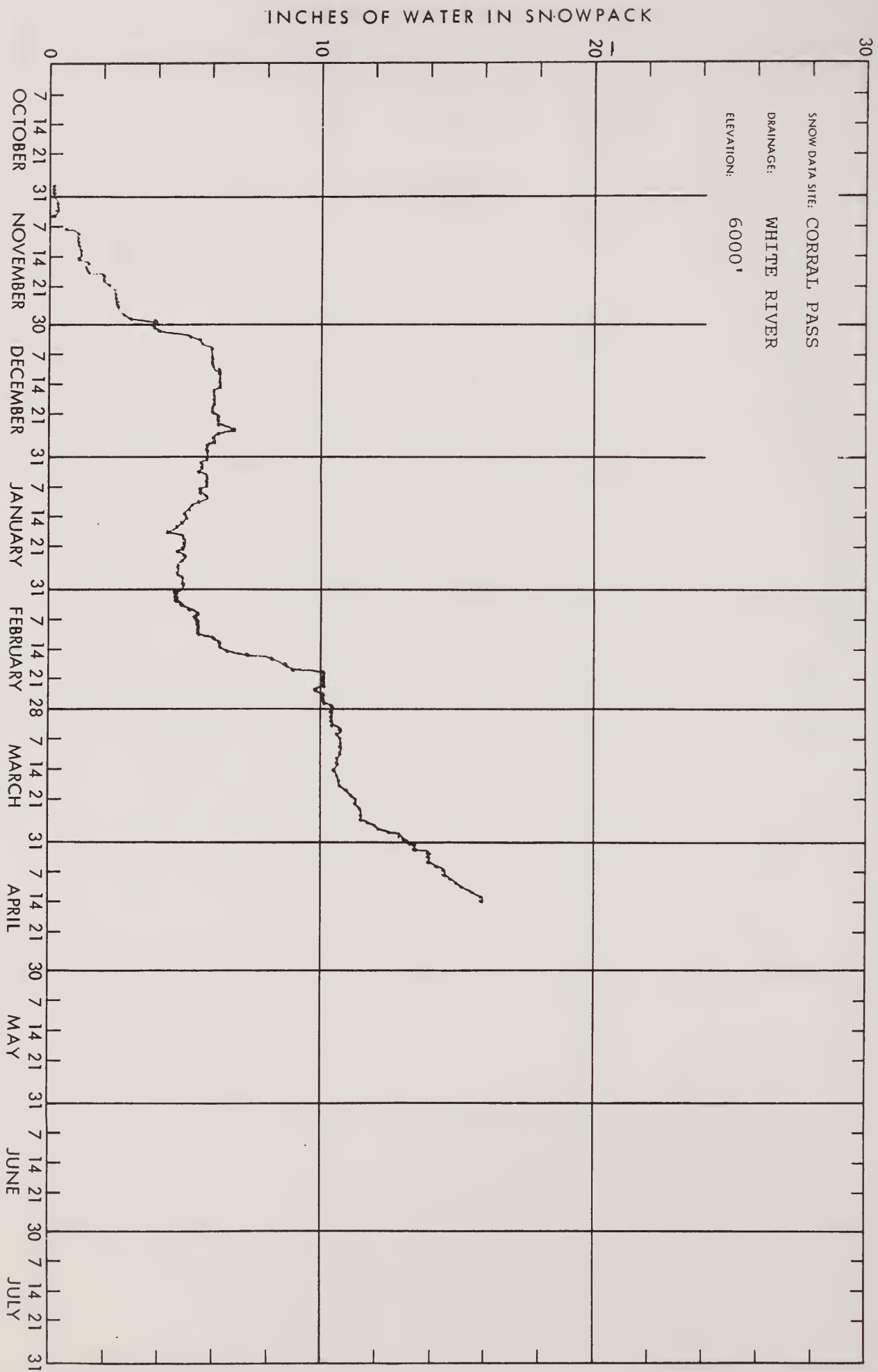


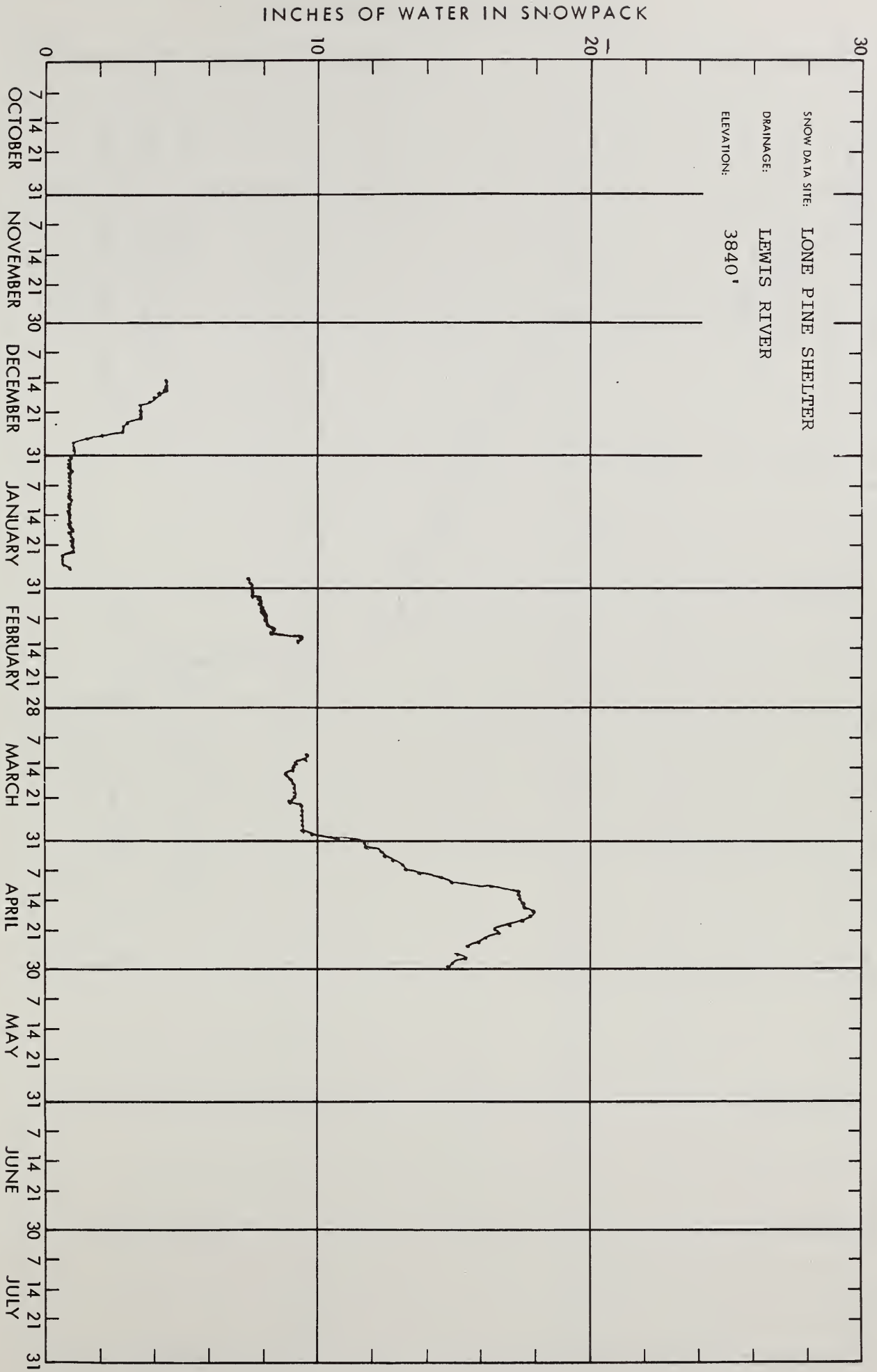
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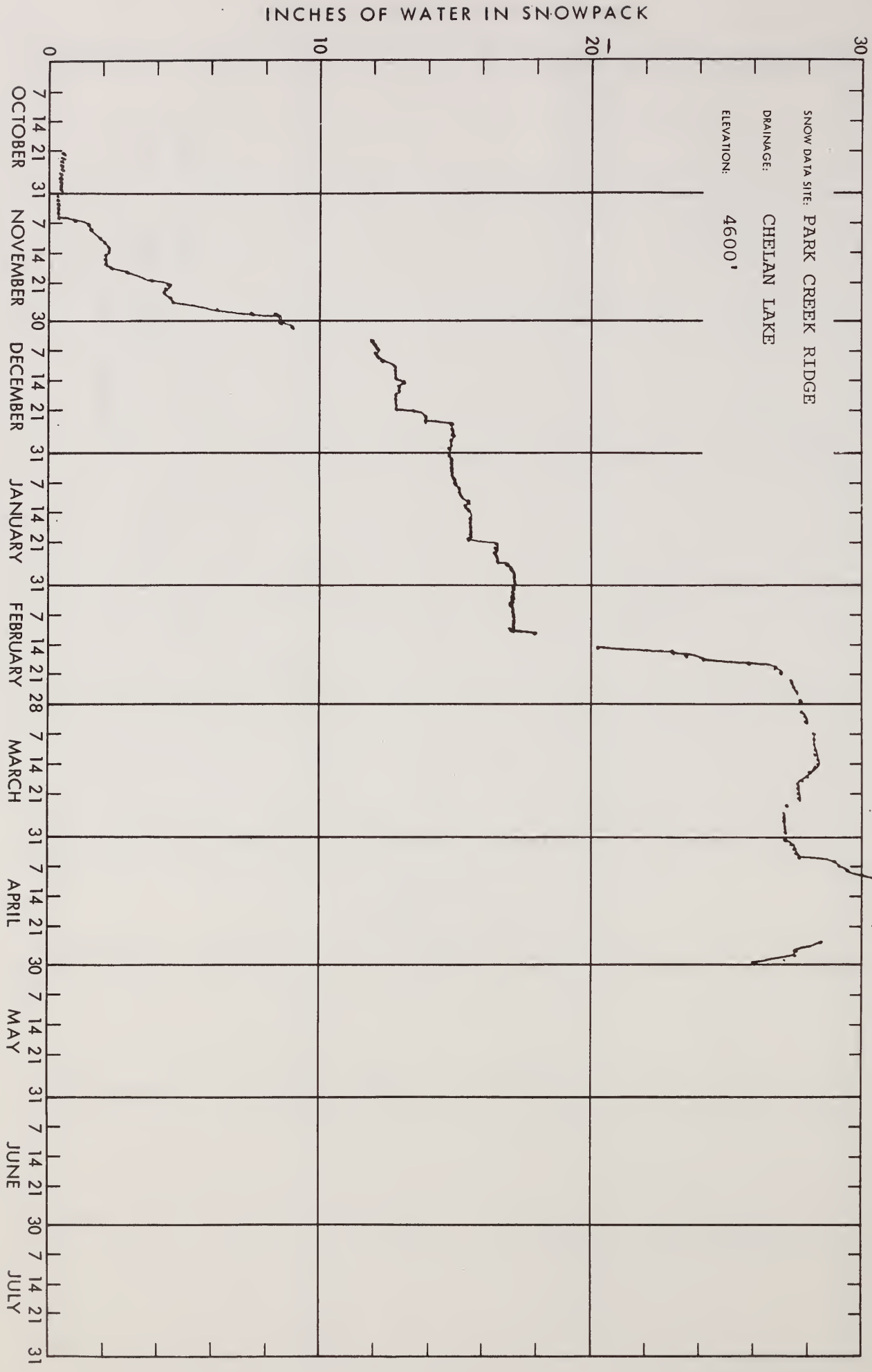
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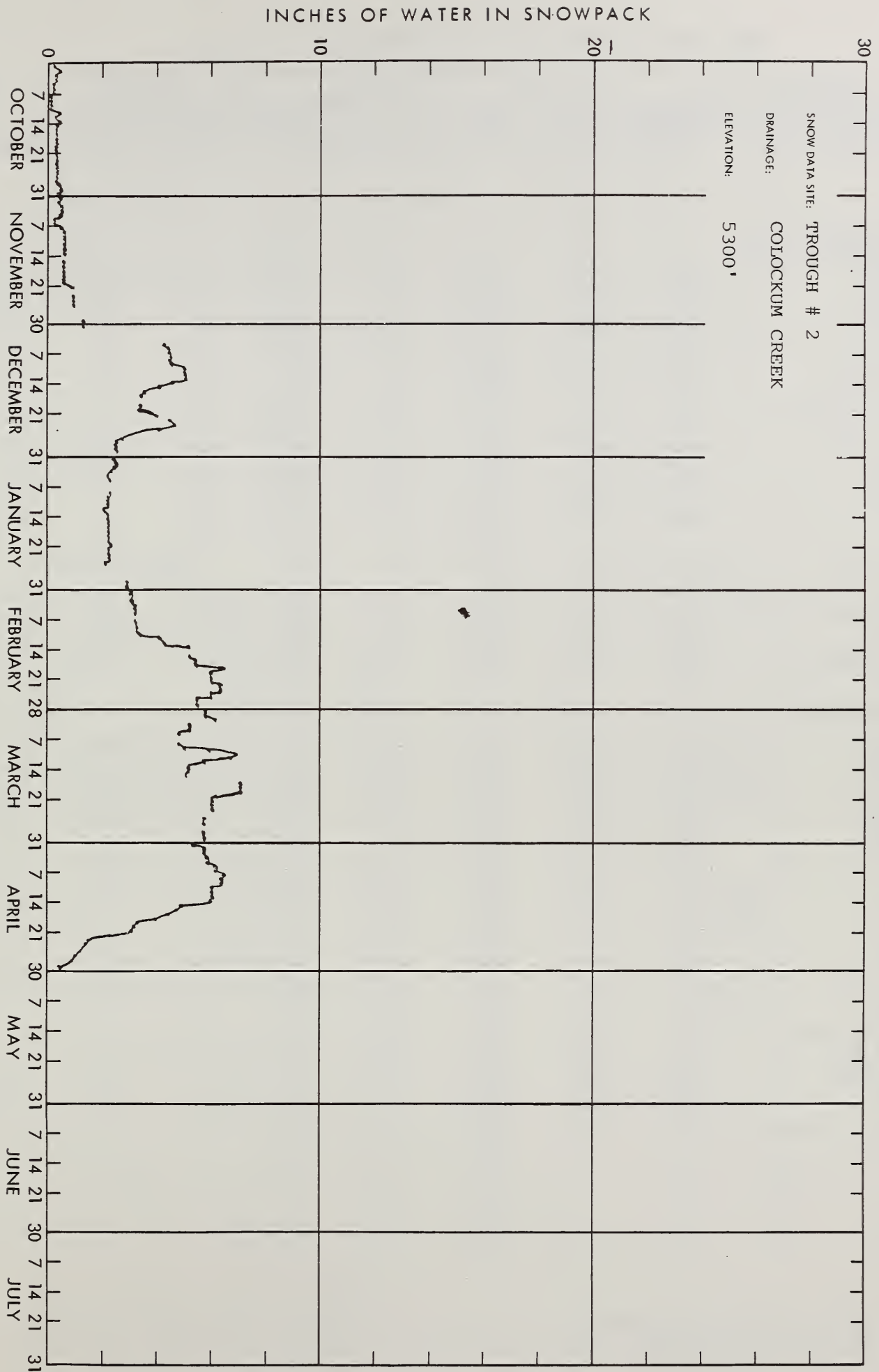












SNOW DATA TO MAY 1, 1981 - APPENDIX 1

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD		
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		
NAME	Number	Elevation				Last Year	1977	Avg. #

U P P E R C O L U M B I A D R A I N A G E

PEND OREILLE RIVER

Baree Creek	15B11	5500	4/30	60	26.6	27.3	18.6	49.5
Baree Midway	15B16	4600	4/30	29	12.2	18.7	11.7	35.1
Baree Trail	15B15	3800	4/30	0	0.0	0.0	0.0	1.8
Benton Spring	16A03	4900	4/29	16	6.5	4.0	0.0	16.7
Boyer Mountain	17A02	5250	4/27	39	14.4	17.2	2.1	25.2
Brush Creek Timber	14A13	5000	4/30	0	0.0	0.0	0.0	8.1
Bunchgrass Meadow	17A01	5000	4/28	59	18.8	18.5	6.5	30.0
Heart Lake Trail	14C10	4800	5/4	0	0.0	11.4	3.3	19.1
Hoodoo Basin	15C10	6000	5/4	77	33.4	44.0	20.6	55.6
Hoodoo Creek	15C01	5900	5/4	68	30.1	39.8	18.4	52.0
Lookout	15B02	5250	4/15	65	21.2	29.2	15.3	38.6
			4/29	37	14.2	17.4	8.3	35.4
Mosquito Ridge	16A04A	5100	4/30	50	18.6	-	4.3	-
Nelson	2D04-Can	3050	5/1	1.6	0.7	2.0	1.5	7.0*
Schweitzer Ridge	16A05	6100	5/1	66	30.4	42.8	14.5	47.5
Smith Creek	16A01	4800	4/29	79	36.8	32.5	15.2	47.4
Winchester Creek	17A03	2970	4/27	0	0.0	0.0	0.0	1.9

KETTLE RIVER

Barnes Creek	2B06-Can	5300	5/1	43	16.5	8.3	14.0	20.7*
Big White Mtn.	2E03-Can	5500	5/2	46	18.1	12.4	10.3	21.1*
Bluejoint Mtn.	2E06-Can	7500	5/1	62	26.0	20.7	11.3	28.7*
Boulder Road	18A02	1450	4/28	0	0.0	0.0	0.0	0.0
Butte Creek	18A03	4070	4/28	5.8	1.7	3.0	0.0	6.0
Cabin Creek	18A08	3170	4/28	0	0.0	0.0	0.0	1.8
Carmi	2E02-Can	4100	5/2	0	0.0	0.0	0.0	2.0*
Farron # 1	2B02-Can	4000	4/30	15	5.9	5.7	1.2	8.4*
Farron # 2	2B02A-Can	4000	4/30	21	8.4	6.1	0.9	9.2*
Goat Creek	18A04	3595	4/28	0	0.0	0.0	0.0	0.0
Graystoke Lake	2F04-Can	5950	4/30	28	10.2	7.8	10.0	20.3*
Monashee Pass	2E01-Can	4500	5/1	25	9.7	2.6	8.0	12.8*
Old Glory Mountain	2B03-Can	7000	5/2	61	24.7	26.8	5.5	30.5*
Snow Caps Creek	18A05	2150	4/28	0	0.0	0.0	0.0	0.0
Snow Caps Trail	18A06	2720	4/28	0	0.0	0.0	0.0	0.0
Summit G. S.	18A07	4600	4/28	4	1.4	0.6	0.0	6.3
Trapping Creek Upper	2E04-Can	4450	5/2	5.5	1.8	0.0	0.0	6.1*

Average based on 1963-77 average

* Average for years of record

SNOW DATA TO MAY 1, 1981 - APPENDIX 2

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD		
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		
NAME	Number	Elevation				Last Year	1977	Avg. #
<u>SPOKANE RIVER</u>								
Above Burke	15B08	6100	4/29	14	4.6	6.3	4.7	19.7
Copper Ridge	16B02	4800	4/30	0	0.0	-	0.0	25.7
Forty-nine Meadows	15B03	5000	4/29	20	7.1	7.2	4.0	26.9
Granite Peak	15B13A	6000	4/29	66	23.1	28.5	15.5	47.6
Kellogg Peak +	16B05A	5560	4/30	0	0.0	-	0.0	-
Lookout	15B02	5250	4/15	65	21.2	29.2	15.3	38.6
			4/29	37	14.2	17.4	8.3	35.4
Lost Lake	15B14A	6000	4/29	82	31.4	34.7	19.3	62.5
Lower Sands Creek	16B01	3400	4/29	0	0.0	6.4	7.3	18.3
Mosquito Ridge +	16A04A	5110	4/30	50	18.6	-	4.3	-
Roland Summit +	15B05A	5200	4/30	6	2.3	-	0.0	-
Sherwin	16C01	3200	4/30	0	0.0	0.0	-	7.2
Sunset +	15B09A	5600	4/30	58	22.3	-	6.5	-

OKANOGAN RIVER

Aberdeen Lake	1F01A-Can	4300	4/29	0	0.0	0.0	0.0	1.7*
Blackwall Mountain	2G03-Can	6250	4/28	65	26.9	25.0	17.4	37.8*
Bouleau Lake	2F21-Can	4580	4/26	34	11.1	6.5	5.7	13.1*
Brenda Mine	2F18-Can	4800	4/28	25	7.7	3.1	0.0	9.9*
Brookmere	1C01-Can	3200	5/1	1.6	0.8	2.7	1.2	5.6*
Enderby	1F04-Can	6250	4/30	99	42.5	31.9	29.9	42.3*
Esperon Creek Lower	2F15-Can	4400	4/26	21	6.1	2.4	0.0	9.3*
Esperon Creek Middle	2F14-Can	4700	4/26	26	8.5	4.3	0.0	12.6*
Esperon Creek Upper	2F13-Can	5400	4/26	33	11.2	8.8	4.7	18.5*
Freezeout Meadow New	20A38	5000	4/30	44	18.0	19.2	14.4	40.3
Grayback Res.	2F08-Can	5225	4/29	23	6.8	1.9	1.4	8.0*
Graystoke Lake	2F04-Can	5950	4/30	28	10.2	7.8	10.0	20.3*
Hamilton Hill	2G06-Can	4900	4/28	20	6.3	19.0	4.6	13.2*
Harts Pass	20A05A	6500	4/29	80	32.9	36.2	21.8	51.5
Isintok Lake	2F11-Can	5510	4/25	7.5	2.8	2.7	0.0	7.1*
Lightning Lake	3D02-Can	4500	4/29	11	3.9	7.9	4.1	11.5*
Lost Horse Mountain	2G04-Can	6300	5/1	16	5.2	5.0	3.8	10.5*
Loup Loup	19A07	4650	4/29	0	0.0	0.6	0.0	6.1
McCulloch	2F03-Can	4200	4/25	9.4	3.3	0.0	0.0	2.7*
Missezula Mountain	2G05-Can	5100	4/27	11	3.9	5.9	0.0	6.0*
Mission Creek	2F05-Can	6000	4/30	77	18.0	11.9	14.7	21.7*
Monashee Pass	2E01-Can	4500	5/1	25	9.7	2.2	8.0	12.8*
Mount Kobau	2F12-Can	5950	4/26	31	10.4	8.2	2.1	12.8*
Mutton Creek No. 1	19A01	5700	4/28	11	4.5	6.1	0.0	11.3
Mutton Creek No. 2SP	19A11SP	6000	4/28	-	5.6	6.6	0.0	13.9
Nickel Plate Mtn.	2G02-Can	6200	4/30	9.1	1.3	4.2	2.6	8.1*
Oyama Lake	2F19-Can	4400	4/29	0	0.0	0.0	0.0	3.1*
Postill Lake	2F07-Can	4500	4/30	17	5.4	0.5	2.7	6.6*

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MAY 1, 1981 - APPENDIX 3

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD		
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		Avg. #
NAME	Number	Elevation				Last Year	1977	
Rusty Creek	19A03	4000	4/28	0	0.0	0.0	0.0	0.8
Salmon Meadows	19A02	4500	4/28	5.2	2.4	4.0	0.0	6.2
Silver Star Mountain	2F10-Can	6050	5/2	55	22.0	20.2	14.6	28.3*
Summerland Reservoir	2F02-Can	4200	4/25	11	3.1	3.4	0.0	6.8*
Sunday Summit	2G01A-Can	4300	4/29	0	0.0	0.0	0.0	1.1*
Trout Creek	2F01-Can	4700	4/27	2.4	0.8	0.0	0.2	5.2*
Vaseux Creek	2F20-Can	4600	4/30	4	1.9	0.0	0.0	2.5*
White Rocks Mountain	2F09-Can	6000	4/29	37	13.6	9.6	6.9	24.8*

METHOW RIVER

Harts Pass	20A05A	6500	4/29	80	32.9	36.2	21.8	51.5
Loup Loup	19A07	4650	4/29	0	0.0	-	0.0	6.1
Mutton Creek No. 1	19A01	5700	4/28	11	4.5	6.1	0.0	11.3
Mutton Creek No. 2 SP	19A11SP	6000	4/28	-	5.6	6.6	0.0	13.9
Rusty Creek	19A03	4000	4/28	0	0.0	0.0	0.0	0.8
Salmon Meadows	19A02	4500	4/28	5.2	2.4	4.0	0.0	6.2

CHELAN LAKE BASIN

Rainy Pass	20A09	4780	4/29	65	30.0	27.6	21.8	47.5
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ENTIAT RIVER

Blue Creek G. S.	20B28a	5425	4/27	72	29.5	25.5	11.9	39.9
Brief	20B19	1600	4/25	0	0.0	0.0	0.0	0.0
Entiat Meadows +	20A33a	4540	4/27	54	22.1	32.3	9.9	35.7
Entiat River Trail +	20A34a	3325	4/27	0	0.0	-	0.0	3.0
Four Mile Ridge +	20B27a	6800	4/27	48	19.7	26.4	4.0	38.5
Fox Camp +	20A36a	6510	4/27	38	15.6	58.9	19.5	64.1
Pope Ridge	20B20	3540	4/29	0	0.0	7.6	0.0	9.8
Pugh Ridge +	20A32a	6725	4/27	61	25.0	26.8	11.2	30.8
Shady Pass	20A37	6200	4/29	39	16.0	23.0	2.2	31.6
Snow Brushy +	20A35a	3910	4/27	45	18.4	8.8	6.9	29.4
Tommy Creek +	20B21a	4900	4/27	28	11.5	7.0	0.0	21.7

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	4/29	19	7.7	14.2	6.0	23.9
Berne-Mill Creek New	21B41SP	3240	4/29	0	0.0	9.9	0.0	19.8
Blewett Pass No. 2	20B02	4270	4/13	16	4.8	11.2	2.2	15.3
			4/28	0	0.0	4.6	0.0	10.8
Stevens Pass	21B01	4070	4/14	66	22.8	44.5	25.6	56.3
			4/29	41	18.2	39.7	22.9	57.5
Stevens Pass Sand Shed	21B45	3700	4/14	37	12.3	29.6	12.2	38.0
			4/29	11	4.7	20.4	7.6	37.3

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MAY 1, 1981 - APPENDIX 4

SNOW

SNOW			THIS YEAR			PAST RECORD		
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		Avg. #
NAME	Number	Elevation				Last Year	1977	
SQUILCHUCK CREEK								
Beehive Springs	20B03	4400	4/28	0	0.0	0.0	0.0	2.2
Scout-A-Vista	20B04	3400	4/28	0	0.0	0.0	0.0	0.3
STEMILT CREEK								
Jump-Off	20B08	4450	4/29	0	0.0	0.0	0.0	3.3
Stemilt Slide	20B06	5000	4/28	0	0.0	2.4	0.0	7.8
Upper Wheeler	20B07	4400	4/28	0	0.0	0.0	0.0	1.3
COLOCKUM CREEK								
Colockum Creek Upper	20B22	5300	4/29	0	0.0	0.0	0.0	10.8
Colockum Creek Lower	20B23	4300	4/29	0	0.0	0.0	0.0	2.8
Trough # 2	20B25SP	5310	4/29	0	0.0	7.5	0.0	New
YAKIMA RIVER								
Big Boulder Creek	21B09	3200	4/14	10	1.3	-	-	-
			4/30	0	0.0	0.0	0.0	10.9
Blewett Pass No. 2	20B02	4270	4/13	16	4.8	11.2	2.2	15.3
			4/28	0	0.0	4.6	0.0	10.8
Bumping Lake	21C08	3450	4/13	5.4	0.5	18.0	0.0	13.8
			5/1	0	0.0	6.7	0.0	10.2
Bumping Lake New	21C36	3400	4/13	7.6	1.6	20.0	0.0	19.6
			5/1	0	0.0	10.5	0.0	15.2
Cayuse Pass	21C06	5300		Late Report		65.0	43.4	98.1
Corral Pass	21B13	6000	4/27	52	22.2	28.0	15.6	42.6
Fish Lake	21B04	3371	4/14	27	9.8	-	-	-
			5/1	Not Measured		15.6	2.0	28.0
Green Lake	21C10	6000	4/10	52	19.0	-	-	-
			4/29	34	17.1	-	-	-
Joe Lake +	21B46a	4624	4/15	132	47.3	-	-	-
			4/30	87	39.2	56.2	40.0	67.0
Lake Cle Elum	21B14M	2200	4/13	Trace	0.0	-	-	-
Lemah Creek +	21B47a	3327	4/15	54	19.3	-	-	-
			4/30	0	0.0	21.6	14.0	40.3
Morse Lake	21C17	5400	4/14	105	37.5	-	-	-
			4/28	74	32.4	48.5	18.0	61.9
Olallie Meadows	21B02	3625	4/14	62	16.2	35.2	20.2	55.1
			4/27	27	12.3	26.6	15.9	53.4
Satus Pass	20D01	4030	5/4	0	0.0	-	-	-
Stampede Pass SP	21B10	3860	4/16	50	14.5	42.4	12.0	42.9
			4/23	35	16.7	27.8	6.9	43.4
Tunnel Avenue	21B08	2450	4/13	12	3.3	16.6	0.0	23.9
			5/1	0	0.0	5.4	0.0	17.5
Van Epps Pass +	20B26a	5925	4/15	94	33.6	-	-	-
			4/30	62	27.9	48.5	21.8	56.1

Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MAY 1, 1981 - APPENDIX 5

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD		
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		Avg. #
NAME	Number	Elevation				Last Year	1977	

YAKIMA RIVER (Cont.)

Waptus Lake +	21B49a	3024	4/15	53	19.0	-	-	-
			4/30	0	0.0	21.6	12.9	38.9
White Pass (E. Side)	21C28	4500	4/13	33	7.5	25.6	6.3	26.9
			5/1	0	0.0	21.6	0.0	27.6

AHTANUM CREEK

Green Lake	21C10	6000	4/10	52	19.0	-	-	-
			4/29	34	17.1	-	-	-

LOWER COLUMBIA DRAINAGESASOTIN CREEK

Spruce Springs	17C04	5700	4/27	22	8.2	14.7	1.8	24.8
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MILL CREEK

High Ridge	18D19	4150	4/30	28	11.9	11.9	-	27.0
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KLICKITAT RIVER

Satus Pass	20D01	4030	5/4	0	0.0	-	-	3.9
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LEWIS RIVER

Lone Pine Shelter	21C26	3800	5/1	SNOTEL	13.9	24.2	15.9	48.0
Marble Mountain	22C05	3200	5/1	SNOTEL	0.9	0.0	4.9	33.6
Plains of Abraham	22C01	4400	5/1	SNOTEL	4.6	41.0	32.9	77.4
Spencer Meadow	21C20	3400	5/1	SNOTEL	7.3	0.0	5.4	19.0

COWLITZ RIVER

Cayuse Pass	21C06	5300		Late Report		65.0	43.4	98.1
White Pass (E. Side)	21C28	4500	4/13	33	7.5	25.6	6.3	26.9
			5/1	0	0.0	21.5	0.0	27.6

PUGET SOUND DRAINAGEWHITE RIVER

Cayuse Pass	21C06	5300		Late Report		65.0	43.4	98.1
Corral Pass	21B13	6000	4/27	52	22.2	28.0	15.6	42.6
Morse Lake	21C17	5400	4/14	105	37.5	-	-	-
			4/28	74	32.4	48.5	18.0	61.9

GREEN RIVER

Cougar Mountain SP	21B42SP	3200	4/27	0	0.0	0.0	-	20.7
Snowshoe Butte SP	21B43SP	5000	4/27	64	25.2	42.9	21.0	67.7
Stampede Pass SP	21B10	3860	4/16	50	14.5	42.4	12.0	42.9
			4/23	35	16.7	27.8	6.9	43.4

Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

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SNOW DATA TO MAY 1, 1981 - APPENDIX 6

SNOW

SNOW			THIS YEAR			PAST RECORD		
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		Avg. #
NAME	Number	Elevation				Last Year	1977	
SNOQUALMIE RIVER								
Olallie Meadows	21B02	3625	4/14	62	16.2	35.2	20.2	55.1
			4/27	27	12.3	26.6	15.9	53.4
SKYKOMISH RIVER								
Stevens Pass	21B01	4070	4/14	66	22.8	44.5	25.6	56.3
			4/29	41	18.2	39.7	22.9	57.5
Stevens Pass Sand Shed	21B45	3700	4/14	37	12.3	29.6	12.2	38.0
			4/29	11	4.7	20.4	7.6	37.3
SKAGIT RIVER								
Beaver Creek Trail	21A04	2200	4/29	0	0.0	0.0	0.0	7.3
Beaver Pass	21A01	3680	4/29	13	6.3	19.2	6.6	34.5
Brown Top Ridge +	21A28a	6000	4/29	114	46.8	50.2	31.0	74.7
Devils Park	20A04	5900	4/29	82	34.4	34.6	22.1	50.4
Freezeout Creek Trail	20A01	3500	4/30	0	0.0	1.7	0.4	10.2
Freezeout Meadows New	20A38	5000	4/30	44	18.0	19.2	14.4	40.3
Granite Creek	21A29A	3500	4/29	4.4	1.7	2.9	2.4	18.2
Harts Pass	20A05A	6500	4/29	80	32.9	36.2	21.8	51.5
Klesilkwa	3D03A-Can	3700	4/29	0	0.0	0.0	0.0	7.2*
Lightning Lake	3D02-Can	4000	4/29	11	3.9	7.9	4.1	11.5*
Meadow Cabins	20A08	1900	4/29	0	0.0	0.0	0.0	1.9
New Hozomeen Lake	21A30	2800	4/30	0	0.0	0.0	0.0	10.5
New Tashme	3D01A-Can	2500	4/29	0	0.0	0.0	0.0	3.2*
Rainy Pass	20A09	4780	4/29	65	30.0	27.6	21.8	45.7
Thunder Basin	20A07	4200	4/29	19	7.8	10.0	10.5	26.2
BAKER RIVER								
Dock Butte	21A11A	3800	4/14	97	37.0	-	-	79.8
				Late Report		52.0	35.0	79.3
Easy Pass	21A07A	5200	4/14	159	60.0	-	-	92.1
				Late Report		63.0	42.2	97.6
Jasper Pass	21A06A	5400	4/14	183	70.0	-	-	100.8
				Late Report		71.0	48.9	99.8
Marten Lake	21A09A	3600	4/14	125	48.0	-	-	87.4
				Late Report		53.0	43.7	87.0
Mount Blum +	21A18a	5800	4/14	153	58.0	-	-	79.6
				Late Report		57.0	40.3	76.1
Panorama New	21A26	4300	4/11	101	31.8	-	36.3	79.6
			5/3	56	25.3	-	35.2	88.3
Rocky Creek	21A12A	2100	4/14	25	10.0	-	-	32.6
				Late Report		0.0	8.8	28.4
Schreibers Meadow	21A10A	3400	4/14	72	27.0	-	-	67.8
				Late Report		30.0	32.4	70.5

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MAY 1, 1981 - APPENDIX 7

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD		
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)		Avg. #
NAME	Number	Elevation				Last Year	1977	

BAKER RIVER (Cont.)

S. F. Thunder Creek	21A14A	2200	4/14	12	5.0	-	-	4.5
				Late Report		0.0	0.0	2.0
Watson Lakes	21A08A	4500	4/14	110	42	-	-	78.9
				Late Report		45.0	35.7	77.7

NOOKSACK RIVER

Panorama New	21A26	4300	4/11	101	31.8	-	36.3	79.6
			5/3	56	25.3	51.0	35.2	88.3

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B04	5200	4/29	9	3.7	14.3	7.8	24.2
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MORSE CREEK

Cox Valley	23B14	4500	4/26	38	15.1	27.9	16.5	45.3
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ELWHA RIVER

Hurricane	23B03	4500	4/26	18	6.5	10.1	8.5	28.2
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Average based on 1963-77 average

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Ministry of the Environment, Water
Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
NOAA, National Weather Service
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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